ABSTRAK

Sigid Tri Handoko. K1513068. **Pengaruh Variasi Lebar Bilah Bambu Terhadap Keruntuhan Geser Balok Bambu Laminasi Dengan Susunan Bilah Vertikal Sebagai Suplemen Bahan Ajar Konstruksi Bambu.** Skripsi, Surakarta : Fakultas Keguruan dan Ilmu Pendidikan Universitas Sebelas Maret Surakarta, November 2018.

Penelitian ini bertujuan untuk (1) Mengetahui sifat-sifat fisika dan mekanika bambu petung, yaitu kadar air, kerapatan, kuat tarik sejajar serat, kuat tekan sejajar serat, kuat lentur, kuat geser dan modulus elastisitas terhadap kelas kuat kayu. (2) Mengetahui pengaruh variasi lebar bilah bambu (10 mm, 15 mm, 20 mm) dengan susunan vertikal terhadap modulus elastisitas (MOE), kuat lentur (MOR) dan tegangan geser (τ) bambu laminasi. (3) Mengetahui nilai optimal variasi lebar bilah bambu dengan susunan vertikal terhadap modulus elastisitas (MOE), kuat lentur (MOR) dan tegangan geser (τ) bambu laminasi. (4) Mengetahui nilai optimal variasi lebar bilah bambu dengan susunan vertikal modulus elastisitas (MOE), kuat lentur (MOR) dan tegangan geser (τ) bambu laminasi terhadap kelas kuat kayu.

Penelitian ini menggunakan metode kuantitatif eksperimen dan teknik analisis data menggunakan analisis regresi sederhana. Variabel yang mempengaruhi dalam penelitian ini adalah (1) variabel bebas / independen : variasi lebar bilah bambu (10 mm, 15 mm, 20 mm) dengan susunan vertikal. (2) variabel terikat / dependen : modulus elastisitas, kuat lentur dan tegangan geser.

Berdasarkan hasil penelitian disimpulkan bahwa, (1) sifat fisika dan mekanika bambu petung termasuk dalam kelas kuat kayu II. (2) penggunaan variasi lebar bilah bambu (10 mm, 15 mm, 20 mm) dengan susunan vertikal berpengaruh terhadap nilai modulus elastisitas (MOE), kuat lentur (MOR) dan tegangan geser (τ). (3) Nilai optimal modulus elastisitas (MOE) menggunakan variasi lebar bilah bambu 10 mm sebesar 6492,60 MPa. Nilai optimal kuat lentur (MOR) menggunakan variasi lebar bilah bambu 15 mm sebesar 69,44 Mpa. Nilai optimal tegangan geser (τ) menggunakan variasi lebar bilah bambu 15 mm sebesar 6,94 Mpa. (4) Nilai optimal variasi lebar bilah bambu dengan susunan vertikal modulus elastisitas (MOE), kuat lentur (MOR) dan tegangan geser (τ) bambu laminasi termasuk dalam kelas kuat kayu III.

Kata Kunci: variasi bilah bambu, bambu laminasi, modulus elastisitas, kuat lentur, tegangan geser.

ABSTRACT

Sigid Tri Handoko. K1513068. ***The Effect of Bamboo Blades Width Variation on Shear Failure of Laminated Bamboo Beams with Vertical Blades Arrangement as Supplements Teaching Materials for Bamboo Construction.*** *Thesis, Teaching Training and Education Faculty of* Sebelas Maret *University Surakarta, December 2018.*

This research aims to (1) Identify the physical dan mechanical properties of Petung bamboo, they are: moisture content, density, tensile strength parallel to the fiber, compressive strength parallel to the fiber, flexural strength, shear strength and elastic modulus of the strong class of wood, (2) Identify the effect of the width variation of bamboo blades (10 mm, 15 mm, 20 mm) with vertical arrangement to modulus of elasticity (MOE), flexural strength (MOR) and shear strength (τ) laminated bamboo, (3) Identify the optimal value of the width variation of bamboo blades (10 mm, 15 mm, 20 mm) with vertical arrangement to modulus of elasticity (MOE), flexural strength (MOR) and shear strength (τ) laminated bamboo, (4) Identify the optimal value of the width variation of bamboo blades (10 mm, 15 mm, 20 mm) with vertical arrangement modulus of elasticity (MOE), flexural strength (MOR) and shear strength (τ) laminated bamboo against the strong class of wood.

This research used experimental quantitative methods and simple regression analysis for the data analysis techniques. The variable that influence in this study (1) independent variable : the width variation of bamboo blades (10 mm, 15 mm, 20 mm) with vertical arrangement. (2) dependent variable : modulus of elasticity, flexural strength and shear strength.

Based on the results of the research, it was concluded that (1) The physical and mechanical properties of Petung bamboo are included in the strong class of wood II, (2) The width variation of bamboo blades (10 mm, 15 mm, 20 mm) with vertical arrangement affects the modulus elasticity (MOE), flexural strength (MOR) and shear strength (τ), (3) The optimal modulus of elasticity (MOE) of the bamboo blade width 10 mm, is 6492,60 MPa. The optimal flexural strength (MOR) of the bamboo blade width 15 mm, is 69,44 MPa. The optimal shear strength (τ) of the bamboo blade width 15 mm, is 6,94 MPa. (4) The optimal value of the width variation of bamboo blades with vertical arrangement modulus of elasticity (MOE), flexural strength (MOR) and shear strength (τ) laminated bamboo are included in the strong class of wood III.

Key Words : *variation of bamboo blades, laminated bamboo, modulus of elasticity, flexural strength, shear strength.*